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CONTENTS

PAGE

TALBOT, G., F.R.E.S. Notes on the genus *Colotis* with descriptions of new forms (Lep. Rhop. PIERIDAE) 51–57

UVAROV, B. P., D.Sc., F.R.E.S. Revision of the genus *Clonia* Stål 1855 (Orthoptera, TETTIGONIIDAE) . . . . . 57–62, 2 figs.

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NOTES ON THE GENUS *COLOTIS* WITH DESCRIPTIONS OF NEW FORMS (LEP. RHOP. PIERIDAE)

By G. Talbot, F.R.E.S.

The material described in the present paper, unless a statement is made to the contrary, is contained in the Hope Department of Entomology, Oxford. I am much indebted to Professor G. D. Hale Carpenter for facilities afforded me for studying the rich series in the Hope Dept. and preparing these notes.

Reference should be made to Talbot, 1939, "Revisional Notes on the genus *Colotis* Hübn.," *Trans. R. ent. Soc. Lond.* **88** : 173–233.

Colotis vesta vesta form **ops** form. n.

The wet-season form of this subspecies appears to be rare in collections, and is so far distinct as to merit a name.

♂. *Upperside* resembles *v. catachrysops* (Butler). Fore-wing with submarginal spots and marginal short streaks much more strongly developed; basal white area enters farther into the base of area 2. Hind-wing marginal spots strongly developed.

Underside with yellow ground-colour usually paler than in the dry-season form.

♀. Resembles the ♂ except that *upperside* is white or pale buff.

Hab.—S.W. Abyssinia : Tirma, 30.ix.1925, 3900 feet, 4 ♂♂, 5 ♀♀.

Colotis pleione nilus subsp. n.

♂. *Upperside* paler ochraceous than in Aden specimens. Hind-wing with ochraceous area more or less reduced and not extending into basal part of area 4.

♀. *Brown form* : Upperside paler than in ♂. Fore-wing subapical spots smaller than in Aden specimens, with a narrow whitish band between them and the marginal black border; marginal border narrower than in Aden specimens. Hind-wing distal area white, merging into the proximal yellow.

White form : Very similar to Aden specimens, but fore-wing outer border somewhat narrower.

Hab.—In the British Museum from Omdurman, Wady el Nil, Nov., 1902 (*H. N. Dunn*), 3 ♂♂, 1 ♀ (brown) (types); *id.*, Gebil Tuis, 12.x.1902 (*H. N. Dunn*), 1 ♂, 1 ♀ (brown); Western Kordofan, Agageh Wells, 13.xi.1902 (*H. N. Dunn*), 1 ♀ (brown); Red Sea (ex Coll. Hew.), 1 ♀, with fore-wing apparently stained blackish. Somaliland, Zaila, 6.vi.1895, 1 ♀ (white with yellow tinge); Red Sea, west shore of Port Sudan, 2.iii.1912 (*G. B. Longstaff*), 1 ♀ (white, with very slight yellowish tinge).

The white females may be called *tethys* Röb.

In the Hope Dept. from Port Sudan (*G. B. Longstaff*), a series of both sexes taken in February and March; all of wet-season form with white females.

In the Hope Dept. all the Aden females of *pleione* are yellow and of the dry-season form. In the British Museum most of the Aden females are white.

Colotis ione ♀ form **erubescens** form. n.

(Dry-season form.)

♀. Allied to *xerophila* Talb. (1939). *Upperside* of fore-wing with basal area slightly dusky; distal area with marginal border reddish-brown; a submarginal series of five

brownish-pink spots, recalling those of the ♂ in position and shape, lying within the inner blackish-brown half of the apical area; inner edge of apical area not or but slightly indented in area 2; usually a post-discal black spot below vein 2. Hind-wing faintly marked as in other dry-season forms.

Underside as in f. *xerophila*.

Hab.—West Tanganyika Territory: Kongwa, ca. 3500 feet, August, 1917 (*K. St. A. Rogers*), 1 ♀ (type). North-eastern Rhodesia: Loangwa Valley, 12–20 miles west of Petauke, 1700 feet, 16.viii.1905 (*S. A. Neave*), 1 ♀. Nyasaland: Fort Johnston, 1922, bred from a wet ♀ f. *natalensis* (*W. A. Lamborn*), pupated April, emerged 29.iv. to i.v., 4 ♀♀; *id.*, from a wet ♀ form of probably *natalensis*, 7–15.v. (*W. A. Lamborn*), 9 ♀♀.

As this form was not represented in the British Museum, Professor Carpenter has kindly presented the whole of Family B, described below, containing five specimens of *erubescens*.

Bred Families of *Colotis ione* (Godart).

These families were bred by Dr. W. A. Lamborn, O.B.E., in 1922 and 1923 at Fort Johnston, Nyasaland. All emerged during the dry season.

Family A.—♀ parent, f. *leucozona* Talb. (1939) (wet-season form). Offspring.—Form *ione* (Godt.), wet-season form, 2 ♂♂; form *leucozona* Talb., not typical extreme wet, 16 ♀♀; form *jalone* (Butler), typical dry form, 14 ♂♂.

Family B.—♀ parent, f. *leucozona* Talb. (wet-season form). Offspring.—Form *jalone* (Butl.) (typical dry form), 8 ♂♂, 2 ♀♀; ♀ f. *erubescens* Talb., 5 ♀♀. The eggs were laid on 23rd April. The insects emerged from 20th to 22nd May in the dry season.

Family D.—♀ parent, f. *leucozona* Talb. (wet-season form). Offspring.—Form *ione* (Godt.), not extreme wet form, 2 ♂♂; form *leucozona* Talb., not typical extreme wet, 14 ♀♀; form *jalone* (Butl.), variable, but mostly extreme dry, 28 ♀♀.

Family F.—♀ parent, form *natalensis* (Stgr.), wet-season form. Offspring.—Form *jalone* (Butl.), dry form, 4 ♂♂, 4 ♀♀; form *erubescens* Talb., dry form, 4 ♀♀.

Family J.—♀ parent very damaged but either the wet form *leucozona* Talb. or *natalensis* (Stgr.). Offspring.—Form *jalone* (Butl.), dry form, 14 ♂♂, 6 ♀♀; f. *erubescens* Talb., dry form, 9 ♀♀.

A Bred Family of *Colotis regina* (Trimen).

Bred by Dr. W. A. Lamborn in 1930, at Maiwale, Nyasaland. All emerged during the wet season between February 7th and 12th.

Family G.—♀ parent, f. *louisa* (Suff.), yellow wet-season form. Offspring.—Wet-season form *anax* (Gr.-Sm.), 10 ♂♂, 6 ♀♀; wet-season form *louisa* (Suff.), 2 ♀♀.

Colotis hetaera (Gerst.) and *C. lorti* (Sharpe).

There seems reason for supposing that *lorti* (Shpe.) is merely a subspecies of *hetaera* (Gerst.). Specimens from Somaliland (*lorti*) and from western Abyssinia (*aspasia*) are allied (see Carpenter, 1935, *Trans. R. ent. Soc. Lond.* **83**: 346). ♂ with broad dark crimson apical area, reaching vein 3 or with a spot in area 3. ♀ usually with two rows of apical spots, but not always, those with only one row not distinguishable from typical *hetaera*.

C. hetaera lorti (Shpe.).—Somaliland, 2 ♂♂, 1 ♀ (white) of dry season. In British Museum from eastern and south-eastern Abyssinia.

C. hetaera aspasia (Ungemach).—South-western Abyssinia, a series of both sexes, wet and dry forms, including four females of f. *thiochroa* (Ungemach); S. Sudan, Mongalla Prov., 1 ♂, 1 ♀, wet form; northern Uganda, Madi district, 3 ♂♂, dry form. Occurs also as a form in Kenya where, in the Rabai district, a ♂ was taken "*in cop.*" with ♀ f. *sulfureus* (Auriv.).

C. hetaera hetaera (Gerst.).—Typically in Tanganyika Territory, Kenya, Uganda, and parts of the Congo. Occurs as a form in the South Sudan. A ♂ of the dry form *puniceus* (Butl.) was taken at Kigala, Ruanda, *in cop.* with the wet ♀ form *albomaculatus* (Auriv.). The ♀ of this subspecies has no inner row of subapical spots except in rare cases where they are vestigial and usually not more than two; only six specimens out of fifty-nine were found with such spots.

Colotis danae pseudacaste f. *nigrilinea* Talb. (1939).

Both sexes of this form are in the Hope Dept. from S. Sudan, Uganda, and Tanganyika Territory. The ♀ may have the apical area of fore-wing red, or bearing streaks which vary from being creamy-white to deep ochraceous. A ♀ from the Sudan, Kideppo River, ca. 2670 feet, 13.xii.1925 (*G. D. H. Carpenter*) has the fore-wing with apical ochraceous streaks, and hind-wing outer border black as far as the post-discal row of spots.

C. danae eupompe (Klug).

Specimens from Eritrea (Anseba Valley), S.W. Abyssinia, and Sudan are larger and more definitely of the wet *eupompe* form than are those from Port Sudan and area of White Nile (4°–6° N. Lat.); the majority from this latter area belong to the dry form *dedecorus* (Feld.).

Also from the Gold Coast, Northern Territory (*D. W. Seth-Smith*); wet form, 5 ♂♂; dry form, 5 ♂♂, 4 ♀♀, and Mombasa (*K. St. A. Rogers*) : wet form 1 ♂.

Colotis eucharis (Fabr.).

The material of this species in the Hope Dept. confirms the conclusions arrived at as to the distribution of the subspecies *evarne* (Klug) and *incretus* (Butl.), as treated by me in 1939 : 191–192. In Uganda, 62% of specimens belong to *evarne*, in Kenya, 60% and in Tanganyika Territory, 25%.

Colotis evenina sipylus Swinh. ♀ form **andromorpha** form. n.

(Wet-season form.)

In general appearance this insect resembles a large ♂ of *evagore* Klug. *Upperside* of fore-wing with apical area orange as in ♂ f. *evenina*, but inner edge only slightly blackened, more so near costa; area 3 with a prominent black spot, representing the lower spot of the band in a normal ♀; base of wing with diffuse black scaling. Hind-wing with a distal costal patch; marginal spots as in ♂ *evenina*, slightly produced on the veins; a submarginal thin bar across area 2.

Underside more lightly marked than in the normal ♀. Fore-wing not darkened at the base; a small distal black spot on inner margin. Hind-wing white, tinged with buff; the usual costal bar and submarginal band dull orange.

Hab.—Western Tanganyika Territory, Mvumi, about 20 m. south of railway, 12.v.1917 (*K. St. A. Rogers*), 1 ♀.

A normal wet-season female was taken at the same place on 9th May, the dark markings slightly reduced.

*

Colotis evippe evippe (Linn.).

The Hope Dept. possesses a gynandromorphic specimen. This was figured by Westwood, 1874, *Thesaurus Entomologicus*, pl. XXXV fig. 11. Markings are of wet-season form. Left fore-wing ♂ except for basal darkening as in ♀, the red band shortened anteriorly. Right fore-wing both ♂ and ♀, the red band broken up into three streaks. Left hind-wing ♂, with a short dark stripe in area 3, and one on vein 5 joined to the marginal dark border; right hind-wing ♀. Abdomen apparently ♀.

A family was bred by Dr. W. A. Lamborn at Lagos. ♀ parent of extreme wet form. Offspring.—Extreme wet form, with basal dark scaling, and marginal border heavy to tornus, 12 ♂♂; normal wet form, 11 ♀♀.

Colotis evippe loandicus (Butl.).

The types, ♂♀, are in the Hope Dept., from Loanda. The ♀ belongs to *antigone* dry form *delphine* (Boisd.), later placed by Butler (1876) as the ♀ of the wet-season ♂ described as *lucullus* (Butl.).

Colotis ephyia (Klug).

The nominotypical form is of the wet-season type. There are 3 ♂♂ of this form in the Hope Dept. from the Nuba Mtns., Sudan, taken in April and October. The dry form is represented from the Nuba Mtns. by 4 ♂♂, 1 ♀, taken in April and December; also by 1 ♂ from Upper Nile, near Pyramids of Meroe, and by a series of ♂♂, 3 ♀♀ from Khartum, taken in January and February.

The ♀ is very rare, only one specimen being contained in the British Museum.

Colotis liagore (Klug).

The nominotypical form of this rare species is represented in the Hope Dept. from the White Nile (14° N.), 1 ♂; Khartum, 1 ♀; Port Sudan, 6 ♂♂, 5 ♀♀. Some females have more than usual black scaling on upperside. The wet-season form *liagoroides* (Roths.) is represented from Khartum by 1 ♂, 3 ♀♀.

Colotis evagore antigone (Boisd.).

Wet form *antigone*. ♂ with apical area of fore-wing ochraceous-yellow, from Kagera River district, 27.xii.1914 (*G. D. H. Carpenter*).

Wet form *emini* (Butl.). A ♂, labelled " W. Africa," is peculiar. Upperside of fore-wing, in area 3, with only a minute orange spot, the black border being nearly 5 mm. wide on vein 4, and joined to inner stripe in area 2 by less dense scaling. Underside of hind-wing pinkish-ochraceous as in some dry-season forms.

♀ f. *eione* (Boisd.). The type of *ramaquebana* (Westw.) belongs to this form and not to a form of *antevippe* as previously supposed.

♂ form *interruptus* (Butler).—This name can be applied to a form near *delphine* (Boisd.) occurring from the Katanga and Angola southwards. Somewhat larger than *delphine*. Fore-wing with black spot in area 3 more prominent, costal and outer margins more heavily black; a weakly-marked inner stripe or distal spot sometimes present. Hind-wing marginal spots more strongly developed than in *delphine*. Underside with either dry-season or wet-season coloration.

A series of this form was bred by Dr. W. A. Lamborn in Nyasaland (Fort Johnston). ♀ parent a very dark specimen of wet f. *contrasta* Talb. Offspring.—21 ♂♂ (f. *interruptus*), 29 ♀♀ (f. *wa* Talb.).

These males have on fore-wing a narrow, more or less diffuse, inner stripe. Hind-wing with a narrow costal stripe; marginal spots triangular, prominent; most specimens with more or less dusky submarginal scaling as in f. *galathinus* (Butl.).

♀ f. *pseudetrida* (Westw.).—This is typically white with orange subapical spots. A variation of this is pale yellow with the subapical spots ochraceous and larger, and no posterior markings. Hind-wing with marginal spots only. Mashonaland (*Marshall*), 2 ♀♀.

Colotis evagore antigone ♀ form **nuba** form. n.

(Dry-season form.)

♀. Resembles ♀ *delphine* Boisd. *Upperside* of fore-wing with apical markings more ochraceous than orange, the border reaching edge of wing, and crossed by the blackened veins; black bar from costa to vein 3 much heavier than in *delphine*, and not interrupted; the ochraceous area extends narrowly beyond the black bar, no discocellular dot. Hind-wing with marginal spots small and weakly marked, as in some *delphine*.

Underside similar to *delphine*. Fore-wing apical area pale ochraceous-yellow, traversed by an orange subapical band, gently curved, its edges diffuse. Hind-wing pale ochraceous-buff, darker on costa and below cell.

Hab.—SUDAN: Nuba Mtns. Prov., Rashad district, 40 miles west of H.Q., between Abu Daheir and Delami, at northern end of Koalib Range, 6.iii.1913, in dry grass in the evening (*R. S. Wilson*), 1 ♀. Taken in the dry season.

Colotis evagore antigone ♀ form **muansa** form. n.

(Dry-season form.)

♀. Somewhat resembles the form *nuba* described above, similarly without marginal black on fore-wing. *Upperside* of fore-wing with broad apical area ochraceous-orange, very much as in some males; marginal short black vein-streaks; a small black spot in area 3 at edge of the orange area, with slight black scaling forming a very faint band to the costa; base of wing dusted slightly with black. Hind-wing with slight basal black dusting; a costal dark spot, weakly marked; small marginal black spots.

Underside of fore-wing as in f. *nuba*. Hind-wing ochraceous-buff, whitish in parts, and sparsely dusted with black.

Hab.—TANGANYIKA TERRITORY: St. Michael's Mission, 32° 45′ E., 3° 45′ S., 21.viii.1916, dry season till light rains begin in early October (*G. D. H. Carpenter*), 2 ♀♀.

Colotis evagore antigone ♀ form **mashona** form. n.

(Dry-season form.)

♀. Rather different from known forms of the species. *Upperside* creamy-white. Fore-wing flushed with pale primrose-yellow, more strongly over the apical area; a series of six marginal prominent black spots on veins 3 to 8, each with a thin proximal prolongation; a small marginal spot on vein 2; apical area crossed by an oblique straight black bar from costal vein to vein 3, defining a subapical yellow area about 3 mm. wide, on which the veins are blackened; costal edge, from about the middle to apex, ochraceous-brown, a discocellular black dot; a post-discal small black spot below vein 2; basal area sparsely dusted with black. Hind-wing with faint yellow tinge; base with sparse black dusting; marginal small spots, weakly marked.

Underside of fore-wing with basal area tinged with lemon-yellow; apical area dull

yellow, striated with ochraceous-brown, and marginally tinged with brownish-pink; band of upperside represented by a row of small ochraceous-brown spots; *dc* dot and post-discal spot as on upperside.

Hind-wing pinkish-brown, strongly striated with ochraceous-brown.

Hab.—MASHONALAND: Salisbury, 5000 feet, 19.vii.1895 (*G. A. K. Marshall*), 1 ♀.

Colotis evagore antigone ♀ form **cataracta** form. n.

(Dry-season form.)

♀. *Upperside* creamy-white; basal areas sparsely dusted with black. Fore-wing with apical area black, bearing a curved orange-red band of five spots, the lower spot, in area 3, without proximal black edging; no red scaling, only a faint yellow tinge, proximally bordering the black area; in the latter character this form differs from all other *antigone* females which have a subapical red band; a discocellular black dot; a post-discal black, somewhat square, spot below vein 2, merging proximally into a somewhat diffuse dark stripe to the base. Hind-wing with a small indistinct costal spot, connected by slight black scaling to a larger post-discal spot in area 4; marginal black spots, those on veins 5 and 6 much more prominent than the others.

Underside of fore-wing creamy-white; a posterior black spot, and *dc* dot as on upperside; apical area pinkish-ochraceous, with four small ill-defined blackish spots along proximal edge. Hind-wing pinkish-buff, strongly striated with ochraceous-brown; costal edge orange along proximal half; a discocellular black dot, edged with orange proximally; a post-discal black spot in area 4, less prominent than on upperside.

Hab.—RHODESIA: Victoria Falls, ca. 3000 feet, rain forest, 19.ix.1905 (*G. B. Longstaff*), 1 ♀.

Colotis evagore antigone ♀ form **arenosa** form. n.

(Dry-season form.)

♀. *Upperside* ochraceous-red with faint markings smoky-brown. Fore-wing with relatively broad outer border from costa to vein 3, wider at apex; a posterior narrow stripe from base to before tornus. Hind-wing with a relatively broad outer border from apex to tornus; a less distinct costal stripe.

Underside paler. Fore-wing more red in the cell and above vein 2. Hind-wing more red along costal edge, and at margin above vein 4, though an indistinct outer border is apparent; an orange-red discocellular dot.

This specimen is of unusually small size, the fore-wing length being only 11 mm.

Hab.—SOUTH SUDAN: Bahr-el-Ghazal, near Yambio, April and May, 1927 (*E. E. Evans Pritchard*), 1 ♀.

Colotis eris eris (Klug).

Two males exhibit what may be termed a double seasonal form.

1. *Underside* of right fore-wing with apical area dull ochraceous-brown, rest of wing white; left fore-wing cream-colour. Right hind-wing, excepting inner border up to vein 1*b*, of the same brown colour as apex of fore-wing; left hind-wing, as far as vein 1*b*, cream-colour, the inner area to vein 1*b* being brown like the right wing.

2. *Underside* of right fore-wing with a dull ochraceous patch on inner margin, extending to a little above vein 2, and from near base of vein 2 to tornus; left fore-wing with apical area broadly ochraceous-brown. Right hind-wing white as in the wet form, the inner area slightly brownish; left hind-wing ochraceous-brown like the apex of fore-wing.

Hab.—SUDAN: Nuba Mtns., 19.x.1904 (*R. S. Wilson*).

Occasional specimens are found in *Colotis* in which the coloration of one side of the wings is of a different seasonal type from that of the other side. The specimens described above are the first I have seen in which the characteristics of both seasonal forms are mixed on one side of the wings.

Colotis eulimene (Klug).

A pupa-case of this species is in the Hope Dept. from Port Sudan. It is long and narrow; thorax not angled, gently and slightly convex. In general appearance this pupa is unlike that of other *Colotis*. An account of the life-history is given by Mrs. E. M. Waterfield in 1925, *Proc. ent. Soc. Lond.* **1925** : xxvi–xxviii. Other notes on this species and on other *Colotis* occurring in the area of the White Nile are given by Dr. G. B. Longstaff in 1913, *Trans. ent. Soc. Lond.* **1913** : 32–45.

REVISION OF THE GENUS *CLONIA* STÅL 1855 (ORTHOPTERA, TETTIGONIIDAE)

By B. P. UVAROV, D.Sc., F.R.E.S.

Clonia Stål, 1855, *Oefv. Sven. Vet.-Akad. Förh.* **12** : 352.
Clonia Saussure, 1888, *Ann. Soc. ent. Fr.* (6) **8** : 129, 138.
Clonia Saussure, 1892, *loc. cit.* **61** : 14.
Clonaria (*sic !*), 1893, Brunner, *Ann. Mus. civ. Stor. nat. Genova* **33** : 184.
Clonia Caudell, 1916, *Gen. Insect.* **167** : 4.

Kirby in 1906 (*Syn. Cat. Orth.* **2** : 226) removed from this genus to *Hemiclonia* Kirby all species differing from the genotype of *Clonia* (*C. wahlbergi* St.) by the abbreviated elytra and wings. The genotype of *Hemiclonia* (*Gryllus melanopterus* L.) is certainly well distinct from that of *Clonia*, being a more robustly built insect and it is possible that *Clonia lalandei* Saussure should also be referred to *Hemiclonia*, but other short-winged species, like *tessellata* Sauss. and *minuta*, are certainly not congeneric with those two, and should be retained in *Clonia*, the mere length of wings not being a character of generic value. I suggest, therefore, that the genus *Hemiclonia* Kirby should be restricted to *H. melanoptera* and *H. lalandei*, characterised by robust habitus, completely black hind-wings and shorter spines of anterior femur.

Defined as above, the genus *Clonia* includes five described species, and I have to add five new ones. It is very probable that many more additional species will be found in southern and south-central Africa.

1. *C. wahlbergi* Stål 1855, figs. 1, W ; 2, W.

Clonia Wahlbergi Stål, 1855, *Oefv. Sven. Vet.-Akad. Förh.* **12** : 352.
Clonia wahlbergi Saussure, 1888, *Ann. Soc. ent. Fr.* (6) **8** : 147.
Clonia wahlbergi Sjöstedt, 1933, *Ark. Zool.* **25** (A) (13) : 6, pl. 4, fig. 1.

Originally described from Port Natal, this species is known to me by specimens from Weenen, Natal; Barberton, Transvaal; Mashonaland and Balla Balla, Southern Rhodesia.

2. *C. maculosa* (Walker 1869).

Saga maculosa Walker, 1869, *Cat. Derm. Salt. Brit. Mus.* **2** : 294.
Clonia maculosa Saussure, 1888, *loc. cit.* : 146.

Saussure (*loc. cit.*) gave a good redescription of this species but later (1892, *loc. cit.* **61** : 15) suggested that it is identical with *C. wahlbergi* St., to which it is certainly very close, but clearly distinct in shorter elytra, longer ovipositor and smaller absolute size. In any case, *C. maculosa* has nothing to do with *C. vittata* of Thunberg, well redescribed by Stål, with which it has been synonymised by Kirby and Caudell.

C. maculosa was described from South Africa, without more precise indication of the locality, and is known to me from Pretoria, Transvaal.

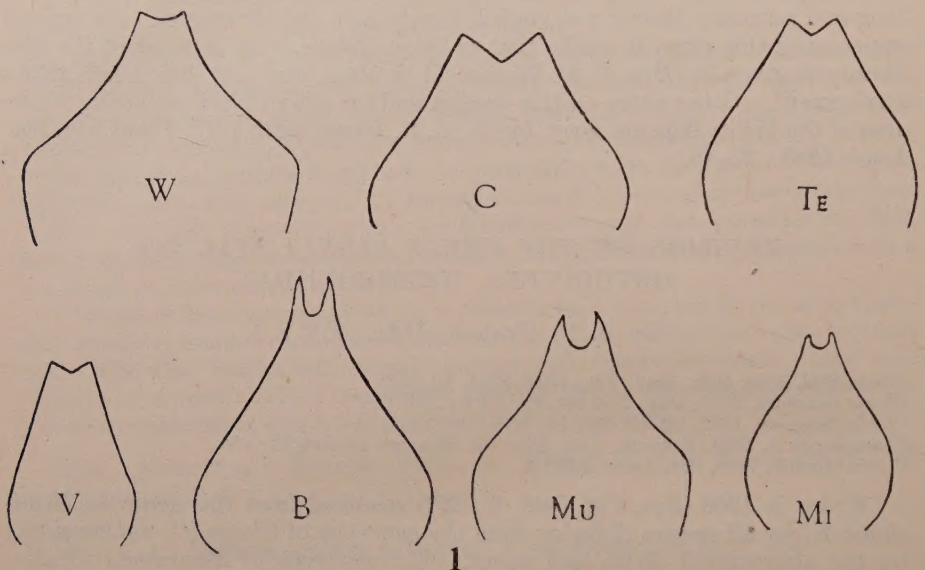

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Fig. 1.—Female subgenital plates. W—*Clonia wahlbergi*; C—*C. caudata*; Te—*C. tessellata*; V—*C. vittata*; B—*C. burri*; Mu—*C. multispina*; Mi—*C. minuta*.

3. **Clonia caudata** sp. n., fig. 1, C.

Closely related to *C. wahlbergi* St., differing from it in smaller absolute size, relatively longer ovipositor and in the angularly excised female subgenital plate (cf. figs. 1, C and 1, W).

♀. Margins of the vertex rugulose anteriorly, swollen and more smooth posteriorly. Pronotum weakly sellate, with the sides viewed from above distinctly bisinuate. Hind margin distinctly reflexed. Furrows very distinct. Lower margin of the lateral lobe very weakly convex; lower anterior angle a little over 90°; lower posterior angle about 70°. Front femur with 8 outer and 7 inner spines. Hind femur below with numerous spinules on both sides. Elytra 8 times the length of pronotum, extending a little beyond hind knee. Wings extending beyond elytra; their length twice their maximum width. Subgenital plate broad generally, and with broadly angularly excised apex (fig. 1, C). Ovipositor 3·5 times the length of pronotum, more distinctly recurved than in *C. wahlbergi*.

General coloration brownish-green. Head with an indefinite whitish postocular stripe. Pronotum with two blackish semilunar spots in metazona and brown-filled sulci on the lateral lobe; lower margin of the lobe of lighter shade than the rest. Pleura with two silvery-white stripes. Elytra in the anterior half light-green, with a series of paler spots; posterior half light-brown with little hyaline spots. Wings mostly dark-brown, with white concentric pattern; costal margin dark-yellow; outer margin very narrowly hyaline.

Measurements see table, p. 62.

S.W. Africa : Grootfontein, 2 ♀, including the type (*J. N. Justice*).
Angola : Cuanza do Sul district, Congulu, iv.1934, 1 ♀ (*K. Jordan*).
The distribution of this species is a good example of the northward extension along the Angolan coast of the characteristic fauna of South-West Africa.

4. **Clonia multispina** sp. n., figs. 1, Mu ; 2, Mu.

Very similar in appearance to *C. wahlbergi* St 1 and to *C. caudata*, but differing from all known species by the more numerous spines of the front femora. The structure of the female subgenital plate is very similar to that in *C. wahlbergi*, but the ovipositor is distinctly shorter and more straight.

♀ (*type*). Margins of the vertex distinctly raised, in the posterior portion with a narrow swelling. Pronotum weakly sellate; its sides viewed from above strongly bi-sinuate. Hind margin reflexed, but its middle portion bent back again. Furrows very distinct. Lower margin of the lateral lobe very weakly convex; lower anterior angle a little over 90°; lower posterior angle acute, attenuate. Front femur with 10–11 outer and 9 inner spines. Hind femur below with numerous spinules on both sides. Elytra 6 times the length of pronotum, scarcely extending beyond the hind knee. Wings longer than elytra; their length twice their maximum width. Subgenital plate strongly narrowed to the apex, which has a narrow parabolic excision (fig. 1, Mu). Ovipositor stout, almost straight, 2·7 times the length of pronotum.

Coloration as in *C. wahlbergi* and *C. caudata*.

♂. Male cercus longer and narrower than in *C. wahlbergi* (cf. figs. 2, W and 2, Mu).

Measurements see table, p. 62.

N. Rhodesia : Kipushi, Congo Border, 1.xi.1927, 1 ♀ (*H. Silvester Evans*).
Nyasaland : Zomba, April–August 1912, 1 ♂, 5 ♀.
Tanganyika Territory : Tukuyu, 5084 ft., 1923–1924, 3 ♂♂, 3 ♀♀, including the type (*N. C. E. Miller*); Morogoro, xi.1939, 1 ♀ (*N. C. E. Miller*); Iringa-Mbogi, Sept. 1931, 1 ♀ (*N. C. E. Miller*); Kalula, Tabora distr., 9.ix.1925, 1 ♂ (*N. C. E. Miller*).
E. Africa : no exact locality, 2 ♀.
In some paratypes there are distinct whitish stripes on the head and along the lower margin of the lateral lobe.

5. **Clonia burri** sp. n., figs. 1, B; 2, B.

A very distinctive species, somewhat resembling in its rather thick-set habitus a *Hemiclonia*, but clearly related to the *wahlbergi* group of *Clonia*. It is remarkable for its relatively short elytra and wings, as well as for its ovipositor, which is the longest amongst all known species. The male cercus (fig. 2, B) is also of a somewhat aberrant shape.

♀ (*type*). Margins of the vertex scarcely raised, very slightly inflated posteriorly. Pronotum scarcely sellate; its sides viewed from above are practically straight. Hind margin weakly reflexed. Furrows practically obsolete. Lower margin of the lateral lobe practically straight; lower anterior angle a little over 90°; lower posterior angle attenuated into a narrow process with parabolic apex. Front femur with 7 outer and 6 inner spines. Hind femur with numerous spinules on both sides below. Elytra 5 times the length of pronotum, not reaching the apex of hind femur. Wings not longer than elytra, half as long again as wide, broadly rounded externally. Subgenital plate strongly attenuated; its apex narrow, parabolically excised (fig. 1, B). Ovipositor weakly recurved, 3·5 times the length of pronotum.

General coloration light-green. Head unicolorous. Posterior half of elytron with brown reticulation; costal margin hyalinous. Wing semi-hyalinous, with blackish concentric pattern; costal margin ochreous.

♂. Pronotum with a very narrow whitish lower margin of lateral lobe. Cercus in the basal part gradually narrowed, apically incurved and somewhat inflated before the apex (fig. 2, B).

Measurements see table, p. 62.

Angola: Moxico district, Villa Luso, 27–31.x.1927, 1 ♀, *type*; upper Mu-Simoj, 20–23.ix.1927, 1 ♂; valley of r. Mu-Simoj, 23–25.x.1927, 2 ♂. Luchase district: river Quangu, 16.x.1927, 1 ♀ (*M. Burr*). Also a number of larvae, not considered as paratypes.

6. **Clonia kenyana** sp. n., fig. 2, K.

A strongly brachypterous species of the *wahlbergi* group.

♂ (*type*). Margins of the vertex weakly raised, but posteriorly well projecting sideways. Pronotum weakly sellate, strongly widened forward; its sides viewed from above strongly bi-sinuate. Hind margin weakly reflexed. Furrows very distinct. Lower margin of lateral lobe convex only in the posterior half; lower anterior angle scarcely over 90°; lower posterior angle produced into a short triangular process. Front femur with 8 outer and 7 inner spines. Hind femur below with numerous spines. Elytra less than half as long again as pronotum, reaching only to the apex of middle femur. Wings not longer than elytra, about half as long again as wide. Cercus as figured (fig. 2, K).

General coloration yellowish (discoloured by alcohol). Head above reddish-brown, with a light median line. Pronotum with reddish-brown sublateral fasciae delimiting a pale median space which is narrowed in the middle. Wing black, with small, irregularly concentric, hyaline spots; costal margin yellowish.

Measurements see table, p. 62.

Kenya: Marsabit, 28.vi.1934, 1 ♂ (*Lake Rudolf Expedition*).

This species is very interesting not only for its structural characters, but also because it represents the northernmost occurrence of the genus *Clonia* in East Africa.

7. *C. tessellata* Saussure 1888, fig. 1, Te.

Clonia tessellata Saussure, 1888, *loc. cit.* : 143.
Clonia tessellata Saussure, 1892, *loc. cit.* : 15.

This species differs strikingly from others by its wings, which are not only very broad, but also have a very peculiar type of coloration, resembling that in some *Gryllacris* spp. The species was described merely from S. Africa, and I have before me one female, from that country, but also without an exact locality label.

8. **Clonia turneri** sp. n., fig. 2, Tu.

A member of the *vittata* group characterised by small size, slender habitus and the head and pronotum bearing black and white, sharply defined markings.

♂ (*type*). Margins of the vertex weakly raised, posteriorly well projecting sideways. Pronotum strongly sellate; its sides viewed from above, very strongly bi-sinuate. Hind margin obliquely reflexed. Furrows well developed. Lower margin of lateral lobe strongly bi-sinuate; lower anterior angle obtuse, rounded; lower posterior angle attenuated into a short triangular process. Front femur with 7 outer and 6 inner spines, which are all very fine, long and somewhat curved. Hind femur below with numerous rather long spinules along both sides. Elytra 8 times as long as pronotum, projecting a little beyond hind knee. Wings a little longer than elytra, about twice as long as wide. Cercus with an angular expansion of the inner edge (fig. 2, Tu).

Coloration light yellowish-green, with striking black and white pattern. Head with a subocular and a postocular white stripe; the latter marginated from inside with blackish-brown. Pronotum with the sulci filled with black; lateral lobe black round the edges, fading to the centre; lower margin of the lobe, however, is broadly silvery-white. Abdomen with lateral series of silvery-white, black-surrounded elongate spots. Elytra subhyaline with brown reticulation, and a series of hyaline spots; costal margin light-green. Wing infumate, with confluent brown concentric pattern; outer edge whitish.

Measurements see table, p. 62.

S.W. Africa: Aus, January 1930, 1 ♂ (*R. E. Turner*).

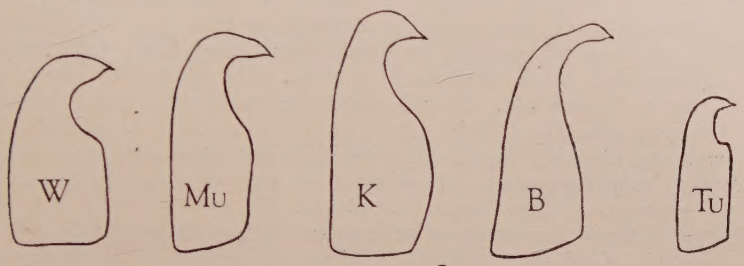

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Fig. 2.—Male cercus. W—*Clonia wahlbergi*; Mu—*C. multispina*; K—*C. kenyana*; B—*C. burri*; Tu—*C. turneri*.

9. *C. vittata* (Thunberg 1789), fig. 1, V.

Locusta vittata Thunberg, 1789, *Nov. Spec. Ins.* **5** : 102.
Clonia vittata Stål, 1874, *Rec. Orth.* **2** : 119.
Clonia vittata Saussure, 1888, *loc. cit.* : 141.

Stål's excellent redescription of Thunberg's type enabled me to determine a specimen from Aus, S.W. Africa, as unquestionably belonging to this slender, broad-winged species, which should never be confused with *S. maculosa* as has been done by Kirby and Caudell.

10. *C. minuta* (Haan 1842), fig. 1, Mi.

Locusta (*Saga*) *minuta* Haan *in* Temminck, 1842, *Verh., Orth.* : 208, 209.

Known to me by specimens of both sexes from the Cape Flats and Ceres, Cape Province.

Preliminary key to the species of *Clonia*.

1(14). Larger, more robust. Head unicolorous, or only with indistinct whitish stripes, but without black ones.
2 (9). Hind-wings longer than elytra, elongate in shape, their length being at least twice the maximum width.
3 (8). Front femur with 7 (exceptionally 8) spines on the outer side.
4 (7). Elytra 8–9 times the length of pronotum.
5 (6). Ovipositor 3 times the length of pronotum. Female subgenital plate with a narrow roundly excised apex (fig. 1, W) . . 1. *wahlbergi* Stål.
6 (5). Ovipositor 3·5 times the length of pronotum. Female subgenital plate with a broad angularly excised apex (fig. 1, C) . . . 2. *caudata* sp. n.
7 (4). Elytra 6 times, ovipositor 3·3 times the length of pronotum. Female subgenital plate with a narrow roundly excised apex
3. *maculosa* (Walker).

8 (3). Front femur with 10–11 (exceptionally 9) spines on the outer side. Elytra 6 times, ovipositor 2·7 times the length of pronotum. Female subgenital plate with a narrow parabolically excised apex (fig. 1, Mu) . . . . . 4. *multispina* sp. n.

9 (2). Hind-wings not longer than elytra, broad, their length not more than 1·5 times their maximum width.

10(11). Elytra 5 times, ovipositor 3·5 times the length of pronotum. Wings 1·5 times their maximum width. Female subgenital plate with very narrow parabolically excised apex (fig. 1, B) . . . 5. *burri* sp. n.

11(10). Elytra not more than twice the length of pronotum.

12(13). Hind-wing elongate, being 1·5 times its maximum width; it is brownish-black, with whitish concentric pattern . 6. *kenyana* sp. n.

13(12). Hind-wing round, as long as broad, brownish-yellow, with narrow, interrupted black concentric pattern. Ovipositor 2·7 times the length of pronotum. Female subgenital plate with broad angularly excised apex (fig. 1, Te) . . . . . 7. *tessellata* Saussure.

14 (1). Small and slender. Head with sharply defined white and black stripes.

15(18). Elytra only somewhat abbreviated, at least 6 times the length of pronotum. Wings longer than elytra.

16(17). Elytra 8 times the length of pronotum. Wings distinctly elongate in shape. Head above without a white median line . . 8. *turneri* sp. n.

17(16). Elytra 6 times the length of pronotum. Wings about as long as wide. Head above with a white median line. Ovipositor 4 times the length of pronotum. Female subgenital plate with the apex angularly excised (fig. 1, V) . . . . . 9. *vittata* (Thunberg).

18(15). Elytra short, 2·8 times the length of pronotum. Wings not longer than elytra, as wide as long, white, with sparse black concentric pattern. Head above with a black stripe including a fine white median line. Ovipositor 4·5 times the length of pronotum. Female subgenital plate with a narrow roundly excised apex (fig. 1, Mi) 10. *minuta* (Haan).

Measurements of *Clonia* spp.

Parts measured	*wahlbergi*		*maculosa*		*caudata*		*multispina*		*burri*		*kenyana*		*tessellata*		*turneri*		*vittata*		*minuta*	
	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.	♂.	♀.
Length of body	56	59	52	55	—	57	51	58	42	53	43	—	—	46	36	—	—	35	27	39
Length of pronotum	8	8·5	8·5	9	—	8	8	9	7·5	8	10	—	—	8	5	—	—	5·5	4	5
Length of elytron	72	80	60	58	—	64	52	56	34	38	13	—	—	16	40	—	—	33	11	13
Length of wing	75	83	61	62	—	66	60	62	33	37	12	—	—	13	43	—	—	36	8	11
Maximum width of wing	34	33	29	28	—	28	28	30	21	22	8	—	—	12·5	19	—	—	18	8	9
Length of hind femur	46	52	—	42	—	48	45	48	35	37	38	—	—	31	31	—	—	28	22	29
Length of ovipositor	—	27	—	29	—	29	—	24	—	28	—	—	—	22	—	—	—	20	—	23

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41, Queen's Gate, S.W.7

1942.

WEDNESDAY, May 6
„ June 3

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